

# MARUZEN

## HYDRAULIC HANDHELD EARTH DRILL

MODEL AY01H

(FOR HORIZONTAL DRILLING)

### OPERATING MANUAL



**CAUTION**

FOR THE SAFETY PURPOSE, PLEASE READ THIS MANUAL THOROUGHLY BEFORE ATTEMPTING TO USE THIS EARTH DRILL. ANY FALES OPERATING PROCEDURES WILL CAUSE DAMAGES OF THE MACHINE. ALWAYS KEEP THIS MANUAL TO AN EASILY ACCESSABLE PLACE.



**MARUZEN KOGYO CO., LTD.**

(Revised April 5, 2007)

# FOREWORD

This manual is an important part of your equipment. It provides rules and guidelines which will help you use this machine safely and effectively. You **MUST** familiarize yourself with the functions and operations by reading the manual thoroughly before you begin using this machine. For your safety, it is especially important that you read and observe all precautions in this manual and labels on the machine. The precautions **MUST** be followed strictly at all times when performing operation and maintenance. \* Fail to follow the guidelines and safety alerts in the manuals and on the machine, or use this machine in alternative ways from the manuals may result in system failure or serious personal injury.

Keep this manual with the equipment or in an easily accessible place in all times for future reference. Make sure all personnel involved in working on this machine can consult it periodically. In case this manual should be lost or damaged, immediately contact us or your dealer to purchase a new copy.

We recommend you always use Maruzen genuine components and parts. Replacing components and parts from other sources may cause damages to this machine and endanger operators.

**MARUZEN KOGYO CO., LTD.**  
155-8 NAGABUSE, MISHIMA-SHI,  
SHIZUOKA-KEN, 411-0824, JAPAN

## CONTENTS

Safety Information.....	4 ~ 7
Safety Alert Classifications.....	4
Safety Alerts .....	5 ~ 7
Introductions .....	7 ~ 8
Specifications .....	8
Descriptions .....	9
Precaution Labels and Positions .....	10
Guidelines .....	11
Storage .....	12
Operation.....	12 ~ 18
Before Starting Engine.....	12
Starting Engine .....	12 ~ 16
Operation .....	16
Stoppage.....	17 ~ 18
Maintenance.....	18 ~ 19
Daily Inspection.....	18
Periodically Inspection .....	19
Troubleshooting.....	20 ~ 21
Exploded View I .....	22
Exploded View II.....	23
Parts List.....	24 ~ 25

## SAFETY INFORMATION

To enable you to use this machine safely, safety precautions and labels are given in this manual and affixed to the machine to give explanations of situations involving potential hazards and of the methods of avoiding such situations.

### SAFETY ALERT CLASSIFICATIONS

The following safety alert symbols are used to inform you that there is a potential hazardous situation that may lead to personal injury or damage.

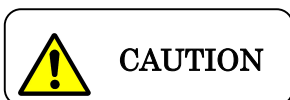
In this manual and on machines labels, the following safety alert symbols are used to express the potential level of hazard.



Indicates an imminently hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

**\*\* Safety alert symbols are to emphasize all operation which, if not strictly followed, could result in a life-threatening situation, bodily injury or damage to equipment.**

## SAFETY ALERTS

DO NOT OPERATE THE MACHINE UNLESS THE FOLLOWING SAFETY INSTRUCTIONS HAVE BEEN THOROUGHLY READ AND UNDERSTOOD!



### WARNING

Before operating the equipment, be sure to wear personal protective equipments such as follows:

1. Helmet
2. Protective goggles
3. Protective boots
4. Safety gloves
5. Hearing Protection



### WARNING

Do not operate the equipment if you are or if your

1. taking medication, feeling drowsy, feeling unwell or feeling tired.
2. under the influence of drugs or alcohol.
3. hands, feet, lower back or other parts of your body hurt or being injured.

\* Failure to observe this precaution can result serious injury or even death.



### **DANGER**

Do not drill the areas where electrical lines, gas lines are installed.

\* Failure to observe this precaution can result serious injury or even death.



### **CAUTION**

**When lending someone the equipment**

Make sure the safety instructions have been thoroughly read and fully understood by the person who is going to use the equipment.



### **DANGER**

1. After excavating the ground for drilling pit, make sure all the preventions have made to avoid falling of bystanders.
2. Make sure all the preventions have made to avoid breaking and falling of earth in the pit.

Failure to observe this precaution can result serious injury of even death.

**WARNING**

**Do not operate this earth drill when bystanders are close to jobsite**

**Do not operate this earth drill if any people are within the area where flying debris, rocks and etc may injure them.**

**Failure to observe this precaution can result personal injury.**

**CAUTION**

**Be cautious for the followings:**

- 1. Be cautious for not being caught up by moving augers.**
- 2. Be cautious for your hands, legs and etc not being cut by the edge of moving augers.**
- 3. Be cautious for your fingers not to be caught up when attaching and detaching augers and extensions.**
- 4. Make sure there are no obstacles at jobsite and be cautious for not being tripped by obstacles.**
- 5. Be cautious for not to be caught up or intervened between wall and earth drill while operating.**

**Failure to observe this precaution can result serious injury**

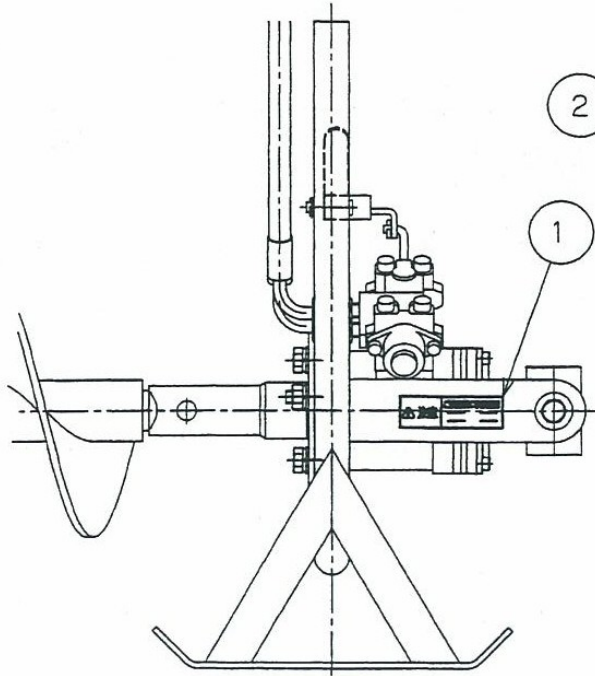
**WARNING**

**Make sure the front edge of auger has been fixed into drilling position before starting the machine.**

**Fail to observe this precaution can result serious injury.**

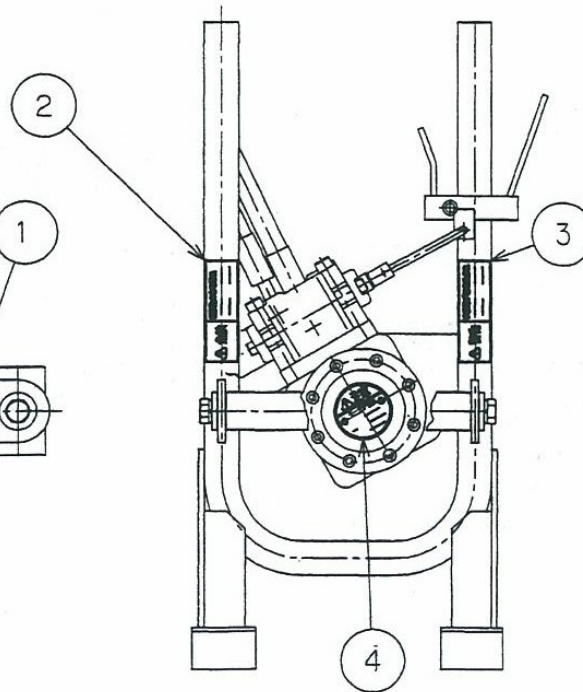
## PRECAUTION LABELS AND POSITIONS

\* Make sure labels are legible. Replace new one when they are illegible.



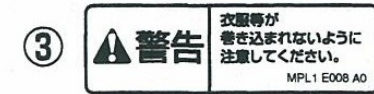
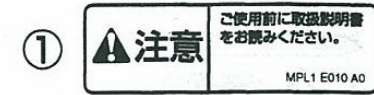
① **CAUTION:** READ operating manual thoroughly before operating.

② **DANGER:** DO NOT drill places where may have electric lines, water pipes, gas lines and etc.



③ **WARNING:** Clothes and etc may be caught in while operating.

④ **CAUTION:** Be careful for not getting burn by motor.





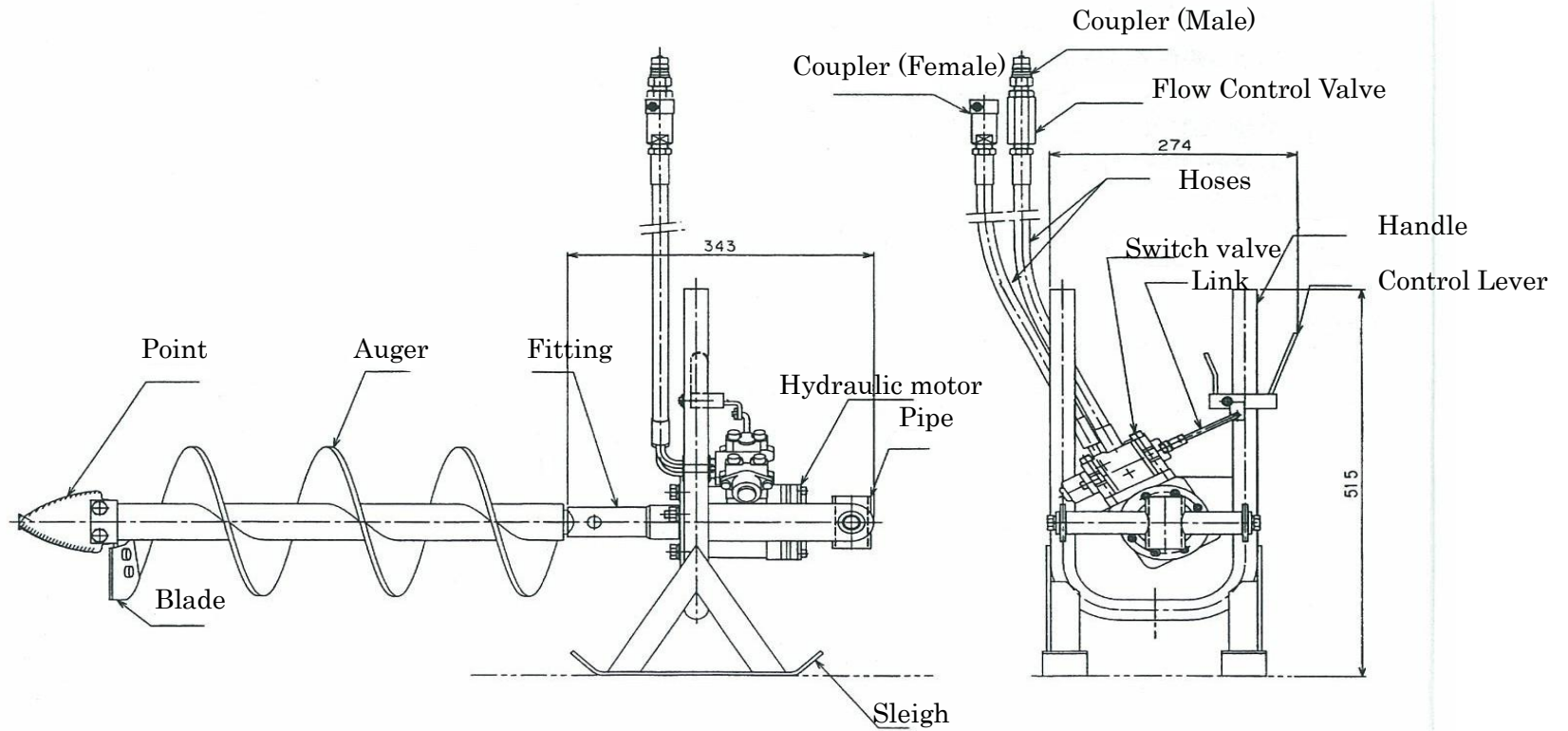
## INTRODUCTION

1. This hydraulic handheld auger is designed for horizontal drilling use.
2. **DO NOT** use under the following conditions:
  - (1) Pressure or oil flow exceeds its specifics
  - (2) The temperature of hydraulic oil is below 10°C or over 100°C.
  - (3) Attach to any other machinery.
  - (4) Attach with augers and extensions other than Maruzen original augers and extensions.
  - (5) Use worn or bent augers, extensions, blades, and bits.

## SPECIFICATIONS

Overall Dimensions	515mm X 274mm X 343mm
Weight	15kg
Max. Pressure	17.2 MPa (175kgf/cm <sup>2</sup> )
Oil Flow	9.5 ~ 25 L/min
Drilling Torque	Max. 88N · m (0.9kgf · m)
Rotation	300rpm (Oil flow in 25L/min)
Coupling	3/8" couplers
Auger Diameters	∅ 38 ~ 300mm

## DESCRIPTIONS



## GUIDELINES

- (1) Make sure the pressure of power source is under 17.2MPa (175kgf/cm<sup>2</sup>), oil flow is in the range of 9.5~25L/min.
- (2) When connecting and disconnecting couplers, make sure dirt, dust and other foreign substance does not enter or attach to couplers and hoses.
- (3) In case of sudden detaching from the power source, STOP the power source immediately.
- (4) If the oil temperature is below 10°C, warm up the earth drill before start operating.
- (5) After disconnected from hydraulic power source, make sure to connect two couplers in AY01H together.
- (6) When frequently attach and detach to the power source, hydraulic oil will decrease accordingly. Always make sure the hydraulic oil level before operating and refill oil if necessary.  
When hydraulic oil gets grimy, performance of the engine in earth drill will fall. It is advisory that you change new hydraulic oil regularly.
- (7) Replace new blade and bit if they are worn out. Using worn blade and bit will decrease drilling performance.
- (8) When earth drill forced to stop due to the obstacles (rock and etc), pull out the earth drill, or turn the rotation the other way round, when the earth drill has been pushed out, make it run in right direction again.  
When the obstacles make the drilling impossible, remove the obstacles before drilling again.
- (9) For ease the reaction force while drilling, use shock absorber rod to support operation. Shock absorber rod should be inserted into rod holder.
- (10) STOP the power source while attaching and detaching hoses.
- (11) Before the operation, make sure there are no electrical lines, gas lines, water pipes, or dangerous objects embedded underground.
- (12) When hoses break and oil belch out accidentally, turn the power pack off immediately.
- (13) Do not use hoses which are worn or with leakage.
- (14) Do not use worn or bent augers, extensions, blades, and bits.

## OPERATIONS

- (1) To absorb shocks from spinning, it is advisory to prepare an iron pipe lever with  $\varnothing$  20mm~35mm, length in 2.5m~3.5m for supporting operating.
- (2) When doing horizontal drilling, a work pit with width 700mm and length 1400mm. Depth should be more than 300mm from the center of drilling hole.



### **DANGER**

Make sure all the preventions are done for collapse of drilling wall.

- (3) It is necessary to have another pit at the other side of the drill (Reaching hole). (See drawing on P. 14)
- (4) For earth drill can be push in smoothly, place a plate (veneer or concrete panel) on the bottom of the work pit.
- (5) Adjust the earth drill to the drilling position by adjust the position of the plate. When earth drill has been adjusted to the right position, fix the plate in one position.
- (6) Connect earth drill and power source with extension hoses.
- (7) Attach auger and extensions to the earth drill. For snap-in type attachment, make sure all the joints are locked firmly.
- (8) Insert a shock absorber (rod), the person on the ground level hold the rod for supporting drilling. See page 14 for more information.
- (9) Start the power source.
- (10) Hold the handles on earth drill firmly. Stick the front of the auger in to determine the drilling position. Grip the control lever on the longer side of the handles, auger will start spinning in the normal direction. Slide the earth drill toward the wall.

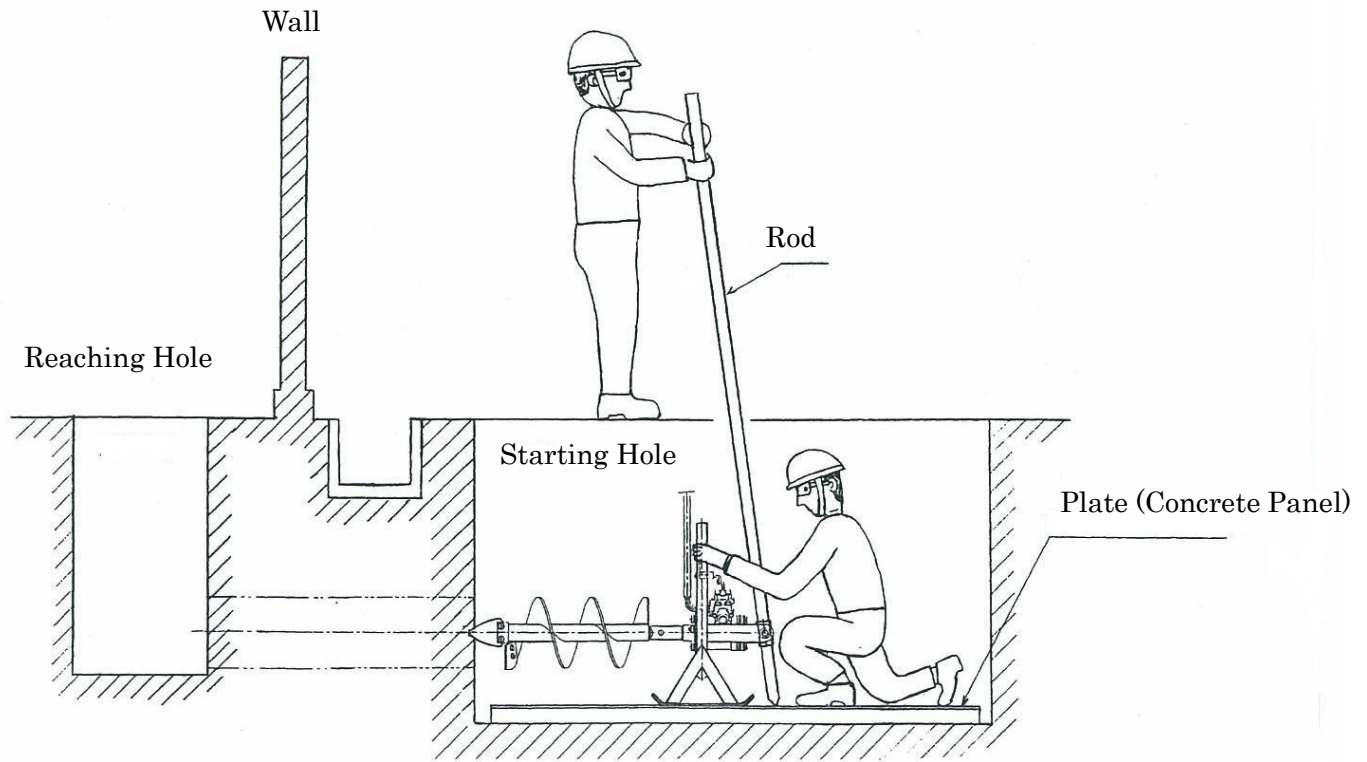


### **WARNING**

DO NOT grip the control lever if auger has not been fixed in the wall.

- (11) Attach extensions to the auger one at each time while drilling. The number of extensions to be attached depends on the length which you intend to drill. When extensions or auger stuck because of the obstacles (rocks and etc), pull out the augers or make the auger spins in inverting direction to drag out the obstacles. When the obstacles are not possible to be dragged out, change the drilling positions or direction or remove the obstacles before start drilling again.

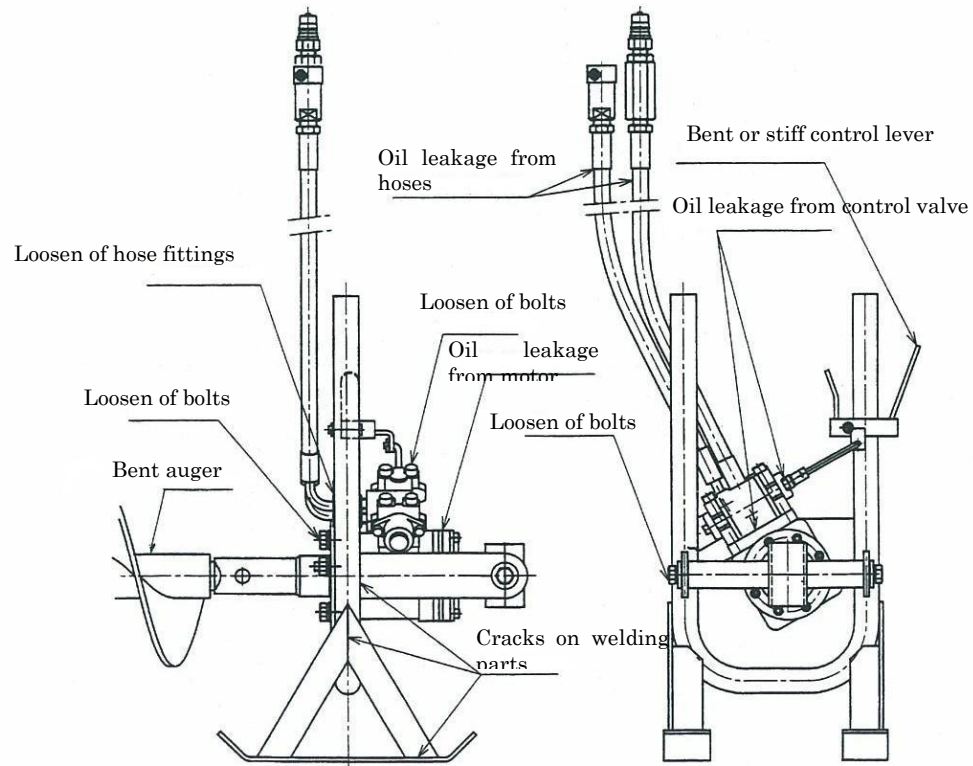
- (12) When auger reaches to the reaching pit on the other side, relief the control lever and stop drilling. Pull out the auger and extensions, detach the extensions one at each time.
- (13) Stop the power source after drilling. Detach the extension hoses. And lift the earth drill out of the drilling pit. Connect couplers (male and female) which on the earth drill together.
- (14) Clean dirt which stays on the earth drill, auger and extensions. Air dry and rust-proof spay before storing.



## INSPECTIONS

Ask Maruzen dealers for repairs and maintenance.

Inspection Items	Countermeasures
Loosens of bolts, nuts and etc	Tighten bolts, nuts and etc
Bents or stiff of control lever	Repair or replace a new control lever
Oil leakage from motor	Ask for repairs
Oil leakage from control lever	Tighten bolts or ask for repairs
Oil leakage from hoses	Replace new hoses
Loosens of hose fittings	Tighten hose fittings
Bents of augers	When it is bend, ask for repairs
Cracks on welding parts on handles	Repairs





## TROUBLE SHOOTINGS

Symptoms	Causes	Countermeasures
Stop suddenly while operating	<ol style="list-style-type: none"> <li>1. Detachment of quick couplers</li> <li>2. Damage of hydraulic motor</li> </ol>	<ol style="list-style-type: none"> <li>1. Check each joints and attachment.</li> <li>2. Repairs or replacement *</li> </ol>
Stiff Switching Lever	<ol style="list-style-type: none"> <li>1. Damage of spring in the valve</li> <li>2. Dirt, dust and etc</li> </ol>	<ol style="list-style-type: none"> <li>1. Repairs or replacement *</li> <li>2. Disassembly and clean *</li> </ol>
Oil leakage from switching lever	<ol style="list-style-type: none"> <li>1. Wear or harden of O ring</li> </ol>	<ol style="list-style-type: none"> <li>1. Replacement *</li> </ol>
Oil leakage from the joint of hydraulic motor and switching lever	<ol style="list-style-type: none"> <li>1. Wear or harden of O ring</li> <li>2. Loosen of blots</li> </ol>	<ol style="list-style-type: none"> <li>1. Replacement</li> <li>2. Tighten the bolts</li> </ol>
Oil leakage from hoses	<ol style="list-style-type: none"> <li>1. Loosen of hose fittings</li> <li>2. Damage of hoses</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten hose fittings</li> <li>2. Replace new hoses</li> </ol>
Low rotation frequency, power source overload	<ol style="list-style-type: none"> <li>1. Overflow of oil(Active relief control valve)</li> </ol>	<ol style="list-style-type: none"> <li>1. Low the engine rotation rate in order to lower oil flow below 25L/min</li> </ol>
Abnormally low rotation frequency	<ol style="list-style-type: none"> <li>1. Low rotation frequency</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust oil flow to the range of 9.5~25L/min *</li> </ol>
Do not rotate	<ol style="list-style-type: none"> <li>1. Power unit is not active</li> <li>2. Control lever is in START position</li> <li>3. Motor malfunctions</li> </ol>	<ol style="list-style-type: none"> <li>1. Start Power Unit</li> <li>2. Turn the control lever to "OPERATE" position</li> <li>3. Repairs or replace *</li> </ol>

Items with \* ask Maruzen dealers for repairs and maintenance.

**PARTS LIST**  
**MODEL AY01H**

No.	CODE	DESCRIPTION	Q'ty	No.	CODE	DESCRIPTION	Q'ty
1	AH18Y001A0	Handle	1	15	ORB-H070	Hydraulic Motor	1
2	WP-8	Washer	1	16	AJ-1009-06	Adapter	2
3	BH-6 X 15	Bolt	1	17	TFD3-03	Switching Valve	1
4	WS-6	Washer	1	18	PS-3, 2 X 15	Pin	2
5	0341-4006	Adapter	1	19	BH-8 X 65	Bolt	4
6	B-10 X 25	Bolt	2	20	0341-4003	Link	1
7	WS-10	Washer	6	21	PS-2 X 12	Pin	1
8	WP-10	Washer	4	22	0341-4002	Lever	1
9	N-10	Nut	2	23	HH-0365<<<<AH01	Hose	2
10	0341-4004	Bolt	2	24	OFS-T302712TC15	Flow Control Valve	1
11	B-10 X 20	Bolt	2	25	QC-03M (32EA04 CZ1)	Male Coupler	1
12	AH18Z003B	Collar	2	26	QC-03F (31EA04 CZXXS)	Female coupler	1
13	OP-1513	O-Ring	2	27	AJ-2040-0406	Male/Female Nipple	2
14	AH18Z002B	Rotation Lever	1				

# EXPLODED VIEW MODEL AY01H

